

# Table 7.1 - Electricity Net Generation

(Billion Kilowatthours)

	<u>1980</u>	<u>1990</u>	<u>1999</u>	<u>2000</u>	<u>2010</u>	<u>2020</u>
Coal <sup>1</sup>	1,162	1,590	1,887	1,968	2,264	2,472
Petroleum <sup>2</sup>	246	124	124	102	38	49
Natural Gas <sup>3</sup>	346	378	561	626	1,153	1,732
Other Gases <sup>4</sup>	0	0	8	6	9	12
Total Fossil Energy	1,754	2,093	2,580	2,702	3,464	4,265
Hydroelectric Pumped Storage <sup>5</sup>	0	-4	-2	1	-1	-1
Nuclear	251	577	728	752	737	702
Conventional Hydroelectric	279	293	316	276	305	304
Geothermal	5	16	15	14	20	35
Wood <sup>6</sup>	0.3	30	37	38	59	64
Waste <sup>7</sup>	0.2	1.3	21	23	31	34
Wind	NA	3	4	5	19	24
Solar Thermal and Photovoltaic	NA	0.6	1	1	2	3
Total Renewable Energy	285	344	395	357	437	464
Other <sup>8</sup>	NA	NA	11	4	4	4
Total Electricity Generation <sup>9</sup>	2,290	3,010	3,712	3,816	4,641	5,434

**Sources:** EIA, *Annual Energy Review 2000*, DOE/EIA-0384(2000) (Washington, D.C., August 2001), Table 8.2, and EIA, *Annual Energy Outlook 2002*, DOE/EIA-0383(2002) (Washington, D.C., December 2001), Tables A8 and A17.

## Notes:

<sup>1</sup> Coal, fine coal, anthracite culm, bituminous gob, lignite waste, tar coal, waste coal, and coke breeze.

<sup>2</sup> Fuel oil # 1, 2, 4, 5, and 6, crude oil, petroleum coke, kerosene, liquid butane, liquid propane, methanol, liquid byproducts, oil waste, sludge oil, and tar oil.

<sup>3</sup> Includes electricity from fuel cells in forecast years.

<sup>4</sup> Blast furnace, coke oven, butane, propane, refinery, and other process and waste gases derived from fossil fuels. Included in Natural Gas in 1980 and 1990.

<sup>5</sup> Pumped storage facility production included in conventional hydroelectric power in 1980.

<sup>6</sup> Wood, wood waste, black liquor, red liquor, spent sulfite liquor, wood sludge, peat, railroad ties, and utility poles.

<sup>7</sup> Municipal solid waste, landfill gas, methane, digester gas, liquid acetonitrile waste, tall oil, waste alcohol, medical waste, paper pellets, sludge waste, solide byproducts, tires, agricultural byproducts, closed looped biomass, fish oil , and straw.

<sup>8</sup> Includes chemicals, hydrogen, pitch, sulfur, purchased steam, and batteries not elsewhere displayed.

<sup>9</sup> Coverage has increased over time from facilities >25 MW before 1989 to include those >5 MW in 1989 and > 1 MW since 1992.



**Table 7.2 - Net Generation at Utilities**

(Billion Kilowatthours)

	<u>1980</u>	<u>1990</u>	<u>1999</u>	<u>2000</u>	<u>2010</u>	<u>2020</u>
Coal	1,203	1,560	1,837	1,922	2,215	2,423
Petroleum <sup>1</sup>	246	117	110	93	28	38
Natural Gas <sup>2</sup>	346	264	363	417	893	1,414
Total Fossil Energy	1,795	1,941	2,310	2,432	3,136	3,875
Hydroelectric Pumped Storage <sup>3</sup>	0	-4	-2	1	-1	-1
Nuclear	251	577	728	752	737	702
Conventional Hydroelectric	276	283	310	272	301	300
Geothermal	5	9	15	14	20	35
Wood <sup>4</sup>	0.3	0.8	8	8	21	15
Waste <sup>5</sup>	0.2	1.3	18	20	28	31
Wind	s	s	4	5	19	24
Solar Thermal and Photovoltaic	s	s	1	1	1	2
Total Renewable Energy	282	294	356	321	391	407
Total Electricity Generation <sup>6</sup>	2,286	2,808	3,392	3,506	4,263	4,983

**Sources:** EIA, *Annual Energy Review 2000*, DOE/EIA-0384(2000) (Washington, D.C., August 2001), Table 8.3, and EIA, *Annual Energy Outlook 2002*, DOE/EIA-0383(2002) (Washington, D.C., December 2001), Tables A8 and A17.

**Notes:**

s = <0.5 bKWh

<sup>1</sup> Fuel oil nos. 1, 2, 4, 5, and 6, crude oil, kerosene, and petroleum coke.

<sup>2</sup> Includes supplemental gaseous fuels in 1980 and 1990, electricity from fuel cells in forecast years..

<sup>3</sup> Pumped storage is included in conventional hydroelectric power in 1980.

<sup>4</sup> Wood, wood waste, wood liquors, wood sludge, peat, railroad ties, and utility poles.

<sup>5</sup> Municipal solid waste, landfill gas, methane, digester gas, waste alcohol, sludge waste, solid byproducts, and tires.

<sup>6</sup> As of 1999, grid-connected nonutility generation is included with electric utility generation. Grid-connected nonutility generation contributed 60% of new capacity additions in 2000 and is expected to represent 80% by 2010. Coverage has increased over time from facilities >25 MW before 1989 to include those >5 MW in 1989 and > 1 MW since 1992.

**Table 7.3 - Electricity Generation by Nonutilities**

(Billion Kilowatthours)

	<u>1980</u>	<u>1990</u>	<u>1999</u>	<u>2000</u>	<u>2010</u>	<u>2020</u>
Coal <sup>1</sup>	NA	31	50	46	49	49
Petroleum <sup>2</sup>	NA	7	14	9	10	11
Natural Gas <sup>3</sup>	NA	114	198	209	260	318
Other Gases <sup>4</sup>	NA	0	8	6	9	12
Total Fossil Energy	NA	152	270	270	328	390
Hydroelectric Pumped Storage	NA	0	0	0		
Nuclear	NA	0.1	0	0		
Conventional Hydroelectric	NA	9	5	4	4	4
Geothermal	NA	7	0.15			
Wood <sup>5</sup>	NA	30	30	30	38	49
Waste <sup>6</sup>	NA	12	3	3	3	3
Wind	NA	3				
Solar Thermal and Photovoltaic	NA	0.6	0.01	0.04	0.81	0.98
Total Renewable Energy	NA	62	39	37	46	58
Other <sup>7</sup>	NA	NA	11	4	4	4
Total Electricity Generation <sup>8</sup>	68	217	320	311	378	452

**Sources:** EIA, *Annual Energy Review 2000*, DOE/EIA-0384(2000) (Washington, D.C., August 2001), Table 8.4, and EIA, *Annual Energy Outlook 2002*, DOE/EIA-0383(2002) (Washington, D.C., December 2001), Tables A8 and A17.

**Notes:**

<sup>1</sup> Coal, fine coal, anthracite culm, bituminous gob, lignite waste, tar coal, waste coal, and coke breeze.

<sup>2</sup> Fuel oil nos. 1, 2, 4, 5, and 6, crude oil, petroleum coke, kerosene, liquid butane, liquid propane, methanol, liquid byproducts, oil waste, sludge oil, and tar oil.

<sup>3</sup> Natural gas only.

<sup>4</sup> Blast furnace, coke oven, butane, propane, refinery, and other process and waste gases derived from fossil fuels. 1990 included with natural gas.

<sup>5</sup> Wood, wood waste, black liquor, red liquor, spent sulfite liquor, wood sludge, peat, railroad ties, and utility poles.

<sup>6</sup> Municipal solid waste, landfill gas, methane, digester gas, liquid acetonitrile waste, tall oil, waste alcohol, medical waste, paper pellets, sludge waste, solid byproducts, tires, agricultural byproducts, closed loop biomass, fish oil, and straw.

<sup>7</sup> Includes chemicals, hydrogen, pitch, sulfur, purchased steam, and batteries not elsewhere displayed.

<sup>8</sup> As of 1999, only cogenerators and off-grid nonutility generation. Coverage has increased over time from facilities >25 MW before 1989 to include those >5 MW in 1989 and > 1 MW since 1992.

**Table 7.4 - Generation and Transmission/Distribution Losses**

(Billion kWh)

	<u>1980</u>	<u>1990</u>	<u>1999</u>	<u>2000</u>	<u>2010</u>	<u>2020</u>
Net Generation Delivered	2,290	3,010	3,172	3,816	4,641	5,434
Generation Losses <sup>1</sup>	4,905	5,870	7,727	8,039	8,249	9,179
Transmission and Distribution Losses <sup>2</sup>	NA	210	234	243	279	293

**Sources:** Calculated from EIA, *Annual Energy Outlook 2002*, DOE/EIA-0383 (2002), (Washington, D.C., December 2001), Tables A2 and A8 and EIA, *Annual Energy Review 2000*, DOE/EIA-0384(2000) (Washington, D.C., August 2001), Tables 2.1f, 8.1 and 8.2.

**Notes:**

<sup>1</sup> Generation Losses for all years are calculated by calculating a Gross Generation value in billion kWh by multiplying the energy input in trillion Btu by (1000/3412) and subtracting the Net Generation in billion kWh from the Gross Generation estimate.

<sup>2</sup> Transmission and Distribution Losses (for 1999-2020) = Electricity Needed to be Transmitted - Electricity Sales, where Electricity Needed to be Transmitted = Total Generation from Electric Generators + Cogenerators + Net Imports - Nonutility Generation for Own Use - Generation for Own Use. Energy losses that occur between the point of generation and delivery to the customer, and data collection frame differences and nonsampling error.

## Table 7.5 - Electricity Trade

(Billion Kilowatthours)

	<u>1980</u>	<u>1990</u>	<u>1999</u>	<u>2000</u>	<u>2010</u>	<u>2020</u>
Interregional Electricity Trade						
Gross Domestic Firm Power Trade	NA	NA	182	157	103	0
Gross Domestic Economy Trade	NA	NA	117	151	190	205
Gross Domestic Trade	NA	NA	299	308	292	205
International Electricity Trade						
Firm Power Imports from Mexico and Canada	NA	NA	19	24	6	0
Economy Imports from Mexico and Canada	NA	NA	20	24	45	47
Gross Imports from Mexico and Canada	25	18	39	48	51	47
Firm Power Exports to Mexico and Canada	NA	NA	3	7	9	0
Economy Exports to Mexico and Canada	NA	NA	11	6	8	8
Gross Exports to Canada and Mexico	4	16	14	13	16	8

**Sources:** EIA, *Annual Energy Review 2000*, DOE/EIA-0384(2000) (Washington, D.C., August 2001), Table 8.1 and EIA, *Annual Energy Outlook 2002*, DOE/EIA-0383(2002) (Washington, D.C., December 2001), Tables A10.